

WHAT IS CLAIMED IS:

1. A scan type exposure apparatus, comprising:
  - a first movable stage on which a first object is to be placed;
  - 5 a second movable stage on which a second object is to be placed;
  - a projection optical system for projecting a pattern of the first object on to the second object;
  - a scanning mechanism for scanningly moving
  - 10 said first and second movable stages in a timed relation with each other, relatively to said projection optical system, while the pattern of the first object is projected by said projection optical system on to the second object;
  - 15 storing means for storing therein a data corresponding to a change in exposure condition as measured beforehand and to be produced by moving at least one of said first and second movable stages; and
  - control means for controlling drive of said
  - 20 first and second movable stages in an actual exposure process, while reflecting a correction value, as determined on the basis of the data stored, to the drive of at least one of said first and second movable
2. An apparatus according to claim 1, wherein the correction value is determined with respect to

plural accelerations or speeds of at least one of said  
first and second movable stages, and [wherein] the  
correction value is set variably in accordance with  
the accelerations or speeds and with directions of  
5 them.

3. An apparatus according to Claim 1, wherein  
the correction value is determined with respect to a  
deviation of a projected image of the pattern of the  
10 first object, upon the second object.

4. An apparatus according to Claim 1, wherein  
the correction value is determined with respect to a  
focus error of a projected image of the pattern of the  
15 first object, upon the second object.

5. An apparatus according to Claim 3, wherein  
the scan exposure is performed while controlling a  
quantity of exposure light in accordance with a speed  
20 of at least one of said first and second movable  
stages.

6. A scanning exposure method wherein a first  
object and a second object are placed and  
placed are scanningly moved in a timed relation with  
each other, relatively to a projection optical system,

while a pattern of the first object is projected through the projection optical system on to the second object, said method comprising the steps of:

5 storing a data corresponding to a change in exposure condition as measured beforehand and to be produced by moving at least one of the first and second movable stages; and

performing scan exposure while reflecting a correction value, as determined on the basis of the data stored, to the drive of at least one of the first and second movable stages.

7. A device manufacturing method wherein a first movable stage on which a first object is placed and a second movable stage on which a semiconductor wafer is placed are scanningly moved in a timed relation with each other, relatively to a projection optical system, while a pattern of the first object is projected through the projection optical system on to the wafer, said method comprising the steps of:

storing a data corresponding to a change in exposure condition as measured beforehand and to be produced by moving at least one of the first and

correction value, as determined on the basis of the data stored, to the drive of at least one of the first

and second movable stages.

8. A method according to Claim 7, wherein the correction value is determined with respect to plural  
5 accelerations or speeds of the first and second movable stages, and wherein the correction value is set variably in accordance with the accelerations or speeds and with directions of them.

10 9. A method according to Claim 7, wherein the correction value is determined with respect to deviation of a projected image of the pattern of the first object, upon the second object.

15 10. A method according to Claim 7, wherein the correction value is determined with respect to a focus error of a projected image of the pattern of the first object, upon the second object.

20 11. A method according to Claim 9, wherein the scan exposure is performed while controlling a quantity of exposure light in accordance with a speed of at least one of the first and second movable

12. A scan type projection exposure apparatus, comprising:

a first movable stage on which a first object is to be placed;

a second movable stage on which a second object is to be placed;

5 a projection optical system;

scanning means cooperable with said projection optical system, for scanningly moving said first and second movable stages in a timed relation with each other and at a speed ratio  
10 corresponding to a projection magnification of said projection optical system so that a pattern of the first object is projected by said projection optical system on to the second object;

detecting means for measuring a position of  
15 an image plane of the first object defined by said projection optical system;

storing means for storing therein image plane positions as measured by said detecting means while scanningly moving said first movable stage, as  
20 correction values related to image plane positions at different scan positions of said first movable stage];  
and

driving means for moving the second object in a direction of focus on the basis of the image plane  
second object with respect to the image plane position.

13. An apparatus according to Claim 12, wherein,  
before image plane position measurement during  
scanning motion of said first movable stage, said  
5 detecting means detects image plane position  
information of the first object defined by said  
projection optical system as said first movable stage  
is held fixed, on the basis of which image plane  
position information said detecting means calculates  
10 information related to image plane positions with  
respect to different scan positions of said first  
movable stage.

14. An apparatus according to Claim 12, wherein  
15 said detecting means includes an illumination light  
source for projecting illumination light on to the  
first object, a first slit for passing a portion of  
the illumination light and provided to the surface of  
the first object, and light receiving means for  
20 detecting light, of the illumination light, passed  
through said first slit and through said projection  
optical system, and wherein said detecting means  
detects information related to image plane positions  
of the first object with respect to different scan  
positions of said projection optical system, on the basis of a  
signal produced by said light receiving means.

15. An apparatus according to Claim 12, wherein  
said detecting means includes an illumination light  
source for illuminating a second slit mark provided on  
5 said second movable stage, and light receiving means  
for detecting light coming from said second slit mark  
and through said projection optical system, and  
wherein said detecting means detects information  
related to image plane positions of the first object  
10 with respect to different scan positions of said first  
movable stage, as defined by said projection optical  
system, on the basis of a signal produced by said  
light receiving means.

15 16. An apparatus according to Claim 14, wherein  
said light receiving means detects light passed  
through said first slit and through said projection  
optical system and then reflected by a reflection  
surface, provided on said second movable stage and  
20 having a surface step structure, and then again passed  
through said projection optical system and through  
said first slit.

image plane position measurement and an observation  
window for observation of a surface of said second

movable stage, wherein said second movable stage is  
formed with a second pattern for image plane position  
measurement, wherein said detecting means includes an  
observation system for simultaneous observation of  
5 said first and second patterns, such that said  
detecting means detects information related to image  
plane positions of the first object with respect to  
different scan positions of said first movable stage,  
as defined by said projection optical system, on the  
10 basis of said first and second patterns observed by  
said observation system.

18. A device manufacturing method, including  
aligning a reticle and a wafer and then projecting and  
15 printing a pattern of the reticle on to the wafer by  
using a scan type projection exposure apparatus as  
recited in any one of Claims 12 - 17, and then  
developing the exposed wafer.